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SATELLITE CROP MONITORING RESULTS TO BE REPORTED

The results of LACIE (Large Area Crop Inventory Experiment) will be the featured topic of study at the first major symposium dedicated to crop monitoring based on space-age technology to be held at NASA's Johnson Space Center in Houston, Oct. 23-26.

LACIE is a three-year effort conducted by NASA, the U.S. Department of Agriculture and the National Oceanic and Atmospheric Administration, working with university and industrial research groups, to determine if wheat production in the major growing areas throughout the world can be estimated using data from satellites and the global weather observing network.

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The LACIE experiment was begun in the fall of 1974 when the Agriculture Department felt the need for an improved source for global crop information. In the United States, USDA has already established a reliable and timely crop reporting system, but for many important wheat-growing areas in other parts of the world such information is limited.

The LACIE experiment involved the research, development and testing of an emerging technology known as remote sensing, combined with conventional weather data, to monitor and inventory agricultural commodities on a global scale.

Wheat, because of its great importance in trade and human nutrition, was the primary commodity investigated for this experiment. Electronic imagery from space was gathered by the Landsat orbiting satellites which continually scan the agricultural regions of Earth and provide data for area estimates. This Landsat data and other ground truth were combined with daily data from 8,000 worldwide weather stations to make timely predictions of crop area, yield and production in domestic and foreign wheat growing regions and to provide an early warning of problems.

The effort on the LACIE experiment took skills in many technical fields.

Earth resources scientists were involved in identifying the "signature" or appearance of wheat in the satellite data. Other scientists were involved in the development of techniques to estimate the growth stage and potential yield of wheat. Computer programs were written to examine weather conditions along with the crop yields achieved in past growing seasons in order to estimate the yield for the current growing season, and to combine area and yield estimates for wheat production reports.

The experiment centered on the hard red wheat crop in the U.S. Great Plains where detailed data is available for comparison and testing of the technology. Comparisons were made with USDA reports and ground truth gathered by county agents over many sites.

The LACIE activity is now nearing completion, and the results show that this new technology can be used effectively in improving the knowledge of global wheat production. The technology is believed to be generally applicable to other crops and the USDA is currently considering the use of this new technology as a data source to aid them in their responsibility to provide early warnings of significant changes in the global commodity production outlook.

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The four day symposium to be held at Johnson Center will conclude the experiment. People from government, industrial agricultural and university communities around the world will be attending to learn more about this pioneering effort, and to discuss how this new technological tool can best be utilized to improve the world food situation.

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